AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in this application:

LISTING OF CLAIMS:

14. (Currently Amended) A method for designing a nuclear fuel assembly which is intended to be positioned in a nuclear reactor, the assembly comprising a plurality of guide tubes and a control cluster which comprises a plurality of control rods and a support for control rods, the control rods and the guide tubes extending in parallel with a longitudinal direction, each of the control rods being received in a guide tube in order to form pairs comprising guide tubes/control rods, each of the guide tubes comprising a lower damping portion which comprises at least a ~~portion~~ section of reduced inside diameter, the lower damping portion configured to contain a fluid for damping a fall of the control rod which is received in the guide tube, the ~~portion~~ section of reduced inside diameter surrounding the control rod with a radial passage gap ~~(J)~~ when the control rod is introduced in the guide tube wherein for at least one pair comprising a guide tube/control rod, the method comprising:

~~establishing~~ calculating a falling speed of the control rod upon entry into the lower damping portion when the control cluster falls in an event of a shutdown of the nuclear reactor;

~~establishing~~ calculating, based on the falling speed, a progression of the falling speed of the control rod in the lower damping portion;

~~establishing~~ calculating, based on the progression of the falling speed of the control rod in the lower damping portion, a maximum elevated pressure ~~(ΔP_{MAX})~~ produced in the fluid contained in the lower damping portion; and

~~establishing~~ calculating, based on the maximum elevated pressure ~~(ΔP_{MAX})~~, a maximum circumferential stress ~~($\sigma_{\theta MAX}$)~~ produced in the lower damping portion.

15. (Previously Presented) The method according to claim 14, further comprising:

verifying, using the maximum circumferential stress, that a maximum stress admissible by the guide tube has not been exceeded.

16. (Currently Amended) The method according to claim 14, wherein the ~~establishing~~ calculating, based on the falling speed, ~~of~~ a progression of the falling speed of the control rod in the lower damping portion, is performed using a higher value for the radial passage gap ~~(J)~~ and the step of ~~establishing~~ calculating, based on the progression of the falling speed of the control rod in the lower damping portion, a maximum elevated pressure ~~(ΔP_{MAX})~~ produced in the ~~liquid~~ fluid contained in the lower damping portion, is performed using a lower value for the radial passage gap ~~(J)~~.

17. (Currently Amended) The method according to claim 16, wherein the higher value is [[a]] the maximum statistical value for the passage gap ~~(J)~~.

18. (Currently Amended) The method according to claim 16, wherein the lower value is [[a]] the minimum statistical value for the passage gap ~~(J)~~.

Claims 19 to 22 (Canceled).

23. (Withdrawn) A system for designing a nuclear fuel assembly, comprising:

an arrangement for establishing a falling speed of a control rod upon entry into a lower damping portion when a control cluster falls in an event of a shutdown of a nuclear reactor;

establishing, based on the falling speed, a progression of the falling speed of the control rod in the lower damping portion;

establishing, based on the progression of the falling speed of the control rod in the lower damping portion, a maximum elevated pressure (ΔP_{MAX}) produced in a liquid contained in the lower damping portion; and

establishing, based on the maximum elevated pressure (ΔP_{MAX}) , a maximum circumferential stress ($\sigma_{\theta MAX}$) produced in the lower damping portion.

24. (Withdrawn) The system according to claim 23, wherein the arrangement comprises a computer arrangement and a storage arrangement in which at least a program comprising instructions for performing the method steps for designing the nuclear fuel assembly is stored.

25. (Withdrawn) An article of manufacture, comprising:

an arrangement containing instructions to establish a falling speed of a control rod upon entry into a lower damping portion when a control cluster falls in an event of a shutdown of a nuclear reactor, establish, based on the falling speed, a progression of the falling speed of the control rod in the lower damping portion, establishing, based on the progression of the falling speed of the control rod in the lower damping portion, a maximum elevated pressure (ΔP_{MAX}) produced in a liquid contained in the lower damping portion, and establishing, based on the maximum elevated pressure (ΔP_{MAX}) , a maximum circumferential stress ($\sigma_{\theta MAX}$) produced in the lower damping portion the article of manufacture configured to be read by a computer.